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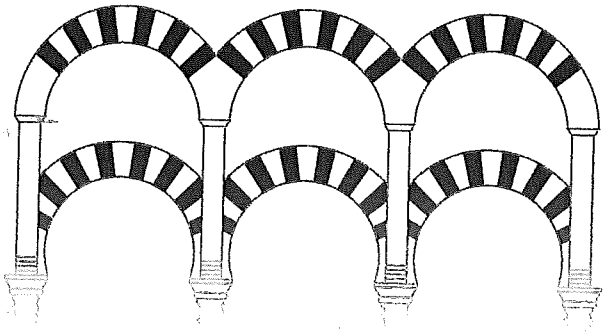

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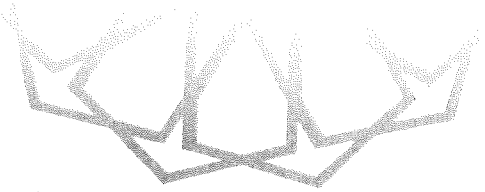

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P. 17.- GROWTH PARAMETER ESTIMATES OF *LISTERIA MONOCYTOGENES* IN COOKED CHICKEN: EFFECT OF PREPARATION OF INOCULUMS.

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Keywords: Listeria, challenge test, growth modelling

INTRODUCTION AND OBJETIVES

Estimates of lag times and growth rates from growth curves for *Listeria monocytogenes* on slices of sous-vide cooked chicken breast were compared for four inoculum preparation procedures. Effects were investigated at different temperatures between 6 and 24 °C.

MATERIAL AND METHODS

Slices of sous-vide cooked chicken breast (12 ± 2.7 g) were inoculated with five 10-µl-spots of a four-strain cocktail of *L. monocytogenes* resulting in inoculation volumes of 0.44 ± 0.11 %. Each strain was inoculated into Brain Heart Infusion broth (BHI) and incubated at 30 °C for 24 h before sub-cultured in four different ways, mixing into a cocktail and used for inoculation; i) dilution in fresh BHI (direct30), ii) chilled incubation for 3 d before dilution in fresh BHI (coldBHI), iii) chilled incubation for 3 d before dilution in Maximum Recovery Diluent (MRD) (coldMRD) and iv) dilution in fresh BHI followed by chilled incubation for 3 d (direct8). Direct30 and direct8 procedures were tested against coldBHI at 8 and 19 °C, whereas the coldMRD procedure was compared to coldBHI in the temperature range from 6 to 24 °C. Growth curves were graphically compared and fitted to Baranyi & Roberts models using DMFit. Lag times (L) and max specific growth rates (μmax) were used for statistical analyses using t-tests and for developing secondary models for the coldMRD and coldBHI procedures. Secondary models were cross-validated using bias (Bf) and accuracy (Af) factors.

RESULTS

Growth curves obtained at 19 °C showed signs of injured cells repairing during the first 3 h when the direct30 procedure was used compared to coldBHI. However, no clear statistical differences were found for L- ($P = 0.07$) or μmax-values ($P = 0.50$). At 8 °C, growth curves obtained for direct30 and coldBHI were identical in the first 30 h then counts became more scattered with a tendency to have higher counts for the coldBHI procedure. Nevertheless, no statistical differences were found neither for L- ($P = 0.99$) nor μmax-values ($P = 0.76$). The direct8 procedure resulted in significantly ($P = 0.04$) longer L at 19 °C but similar μmax ($P = 0.12$) when compared to coldBHI. At 8 °C, growth curves obtained using the direct8 procedure appeared to have no lag phase when fitted. However, these curves showed clear signs of injured cells repairing during the first 5 – 7 h which suggested that the obtained L-values of 0 could be an artefact resulting from the curve-fitting procedure. Based on Bf, μmax-estimates obtained using the coldBHI procedure were on average 12 % higher than results observed for coldMRD. An Af of 1.17 was found when coldMRD observations were used for validating the coldBHI secondary μmax-model. In the opposite case, a slightly lower Af of 1.14 was found. Graphical comparison showed approx. 3-fold longer L for coldMRD below 10 °C.

CONCLUSIONS

Even with very low inoculation volume, estimates of lag times and growth rates of *L. monocytogenes* were significantly affected by the procedure used for preparation of the inoculum.